

Stereo Cassette Deck

Operating Instructions

*TC-WR510
TC-W310*

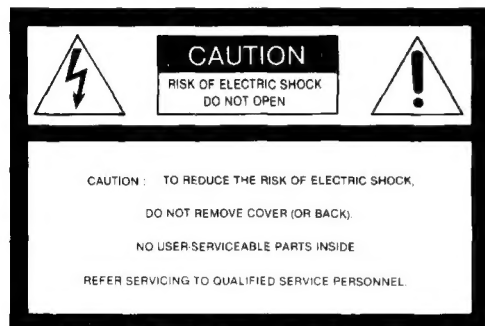
Owner's Record

The model and serial numbers are located at the rear. Record these number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. _____ Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

*The graphical symbols are on the rear enclosure.

NOTICE FOR CUSTOMERS IN THE UNITED KINGDOM

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

- Blue: Neutral
- Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured

INFORMATION (TC-WR510 only)

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the equipment with respect to the receiver
- Move the equipment away from the receiver
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

markings identifying the terminals in your plug proceed as follows:

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

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Differences between the TC-WR510 and the TC-W310

This instruction manual covers both the TC-WR510 and TC-W310; the differences between the two are as follows:

The TC-WR510 has a direction reversal function and the TC-W310 does not.

The TC-WR510 can be used with an optional remote control unit for remote pause control during recording and playback and the TC-W310 cannot.

The illustrations used in this manual are of the TC-WR510.

Features

- **Double deck:** deck A for playback and deck B for recording/playback.
- **B and C type Dolby NR*** systems to reduce tape hiss noise.
- **Synchro dubbing** at normal or high (double) speed.

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.

"DOLBY", the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

Precautions

On safety

- Before operating the unit, check that the operating voltage of your unit is identical with the voltage of your local power supply.
- Should anything fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it will not be used for a long time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.
- The unit is not disconnected from the AC power source as long as it is connected to the wall outlet, even if the unit itself has been turned off.
- The nameplate indicating operation voltage, power consumption, etc. is located on the rear of the unit.

On operation

- When the unit is not being used, turn the power off to conserve energy and to extend the useful life of your unit.
- Because of a safety mechanism, the function buttons will not operate if the cassette holder is not completely closed, if there is no cassette, or if a cassette has been incorrectly inserted into the cassette holder.

On head cleaning

The heads and tape path should be cleaned after every 10 hours of operation. Dirty heads and a dirty tape path may cause:

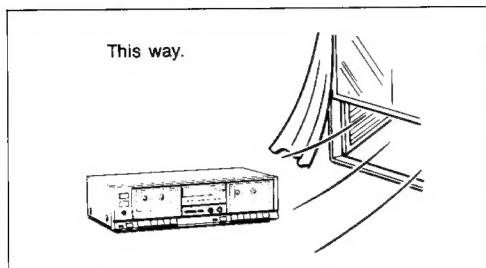
- Loss of high-frequency response
- Loss of sound volume
- Sound drop-out

If you have any questions or problems concerning your unit, please contact your nearest Sony dealer.

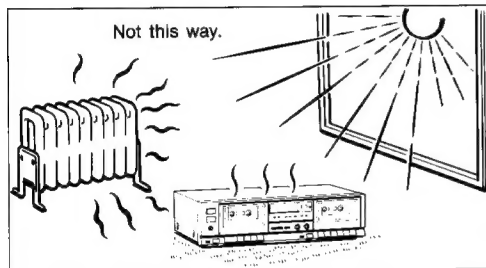
Installation

Notes on installation

Place the unit in a location with adequate air circulation to prevent internal heat build-up in the unit.



Do not place the unit on a soft surface, such as a rug, that would block the ventilation holes on the bottom.



Install the unit with the front panel facing toward you.

Do not install the unit:

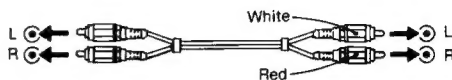
- near heat sources such as radiators or air ducts.
- in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- in an inclined position.

Do not throw away the carton and the packing material!
They come in handy when transporting the unit or shipping it for servicing.

Connections

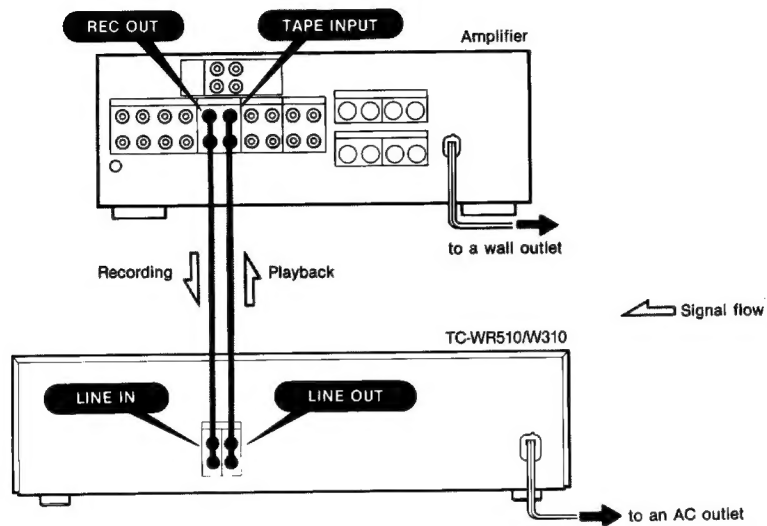
Notes on Connections

- Turn off the power to all equipment before making any connection.
- Note that the red plug of the supplied connecting cord is for right-channel (R) connection and the white plug for left-channel (L) connection.



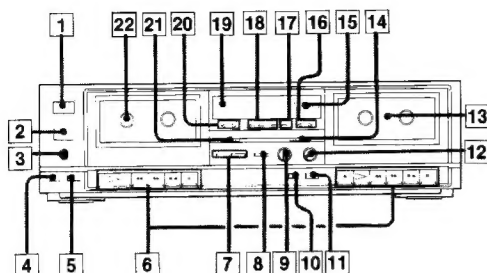
- The connecting cords should be fully inserted into the jacks. A loose connection may cause hum pick-up.

Connection Diagram



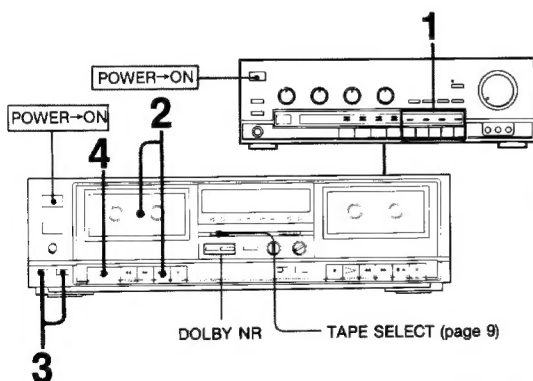
Identification of Front Panel Parts

Refer to the pages indicated in ● for details.

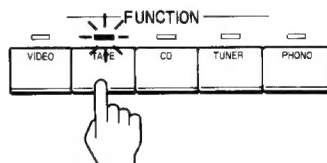


- 1 POWER switch
- 2 Remote control sensor* (TC-WR510 only)
- 3 HEADPHONE jack (stereo phone jack)
- 4 MODE selector (deck A) (TC-WR510 only) ⑦
- 5 DIRECTION selector (deck A) (TC-WR510 only) ⑥
- 6 Tape operation buttons
 - REC (record) button (deck B)
 - ▷ (play) button
 - ◀◀ (leftward fast winding) button
 - ▶▶ (rightward fast winding) button
 - ▲ (stop/eject) button
 - || (pause) button
- 7 DOLBY NR switch ⑦
- 8 DUBBING SPEED switch ⑧

Playback (On Either Deck A or B)



1



Before turning the power off

Be sure to release ▷ by pressing ■ ▲. Otherwise, the tape may become entangled when power is turned on again.

After winding the tape using ◀◀ or ▶▶

Be sure to press ■ ▲ to shut the unit off.

When both decks A and B are in the playback mode

Only playback from deck A will be audible.

You cannot use the || button on the deck and on the remote commander at the same time (TC-WR510 only)

When you press || on the remote commander to place deck B into pause mode, the REMOTE PAUSE indicator will light and || on the deck will be disabled. Use the remote commander to release the pause mode.

When the deck is placed into pause mode by || on the deck, (the REMOTE PAUSE indicator will not light), press || on the deck to release the pause mode.

To listen to the other side of the cassette during playback (TC-WR510 only)

Press the DIRECTION button.

9 BALANCE control
Adjusts the balance of right and left channel during recording

10 MODE selector (deck B) (TC-WR510 only) ③, ⑪

11 DIRECTION selector (deck B) (TC-WR510 only) ③, ⑫

12 REC LEVEL (recording level) control ④

13 Cassette holder (deck B)

14 TAPE SELECT switch (DECK B) ⑤

15 TAPE COUNTER and RESET button (DECK B)

16 MODE indicators (DECK B) (TC-WR510 only)

17 PAUSE Indicator (TC-WR510 only)

18 DUBBING SPEED indicator(s) and REC (record) Indicator


19 PEAK LEVEL METER ⑥


20 DIRECTION MODE indicators (DECK A) (TC-WR510 only)

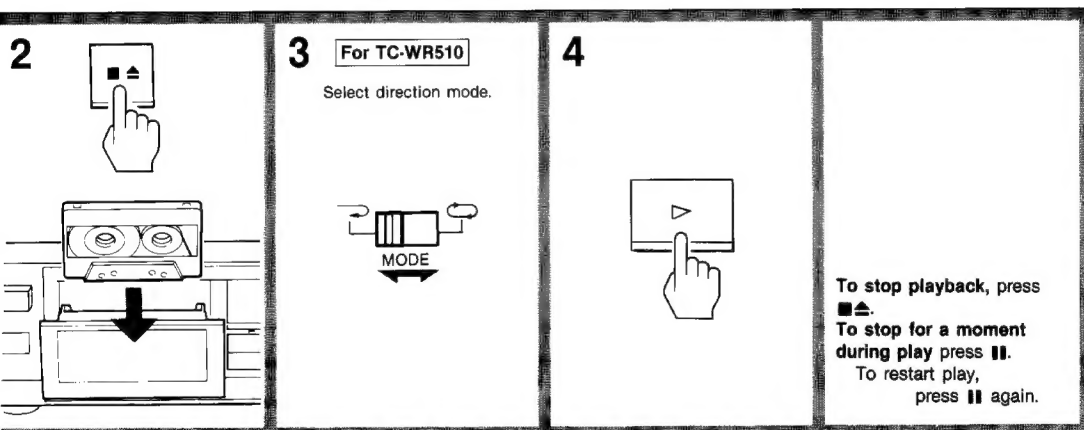
21 TAPE SELECT switch (DECK A) ⑤

22 Cassette holder (deck A)

* You can control this cassette deck remotely with:






— Any remote commander (supplied with a Sony amplifier or receiver) which is marked with the  logo and has cassette deck control capability.

— An optional Sony remote commander with the  logo.



How to use the DOLBY NR switches

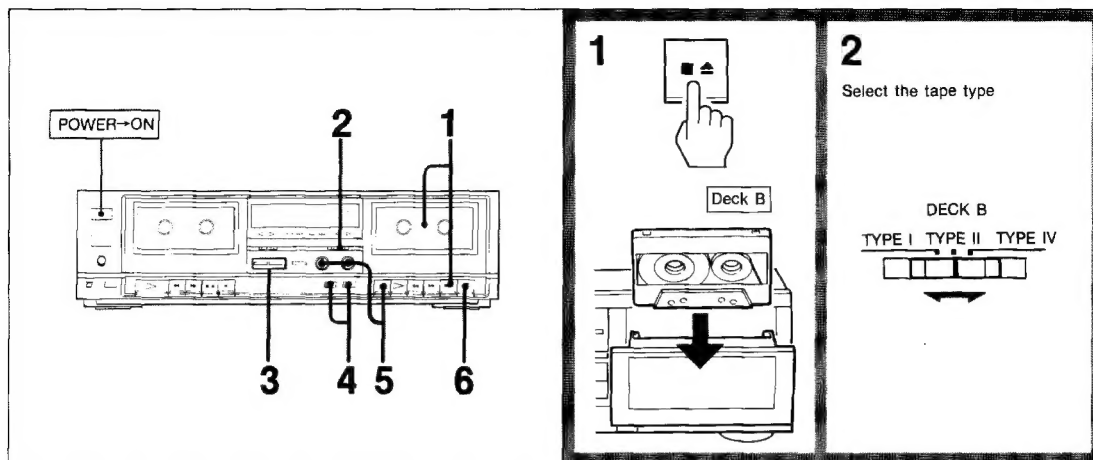
Set the DOLBY NR switches to the same position that was used when the cassette was recorded.

Dolby NR system	Switch setting	
	ON/OFF (left)	B/C (right)
B type		
C type		
OFF		Either position

What is the Dolby NR system?


The Dolby NR (noise reduction) system reduces tape hiss noise in low-level, high-frequency signals by boosting the signals during recording and then lowering them during playback.


Recording (Only on Deck B)




How to use the TAPE switch (Step 2) and the DOLBY NR switch (Step 3)
See page 7.

How to use the MODE selector (Step 4)

To record on one side, select .


To record on one side and then the other, select .

Even at the  position, recording automatically stops when the tape reaches the end of the reverse side.


How to start recording more precisely

1 Press .

2 Press  keeping  pressed.

3 Press  again at the desired point.

The side being recorded is shown by the blinking indicator

If, however, the cassette tab has been removed to prevent accidental erasure,  will not operate. (See page 11.)


Before turning the power off

Be sure to release  by pressing .

You cannot change the side of the cassette while recording (TC-WR510).

Select the side to be recorded with the DIRECTION button before you start recording.

When you select  with the MODE selector for recording (TC-WR510)

The deck will stop at the end of the reverse side of the tape, even if the  position is specified by the MODE selector.

Note

Do not start playback on deck A while recording other sources on deck B since the playback of deck A will be recorded on deck B.

3

Select the DOLBY NR setting.

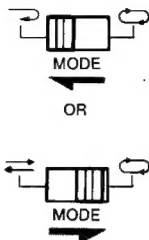
DOLBY NR



4

For TC-WR510 only

Select the side(s) to be recorded.



Press II.

5



See "Recording Level Adjustment".

6

When you want to start recording, press II again to release.

To stop recording, press ■.

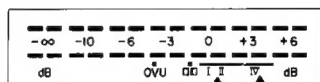
Recording Level Adjustment

Adjust the recording level according to the PEAK LEVEL METER marking for the respective tape type, as shown in the illustration to the right.

Tips on recording level adjustment

- Adjust the recording level as high as possible without causing distortion in the recorded sound. If the recording level setting is too high, the recording will be distorted; if it is too low, the tape will produce a hissing sound.
- If the program source to be recorded has many high frequency signals, set the level to a relatively low position.

Recommended maximum PEAK LEVEL METER recording



For TYPE I (normal) or TYPE II (CrO₂) tape

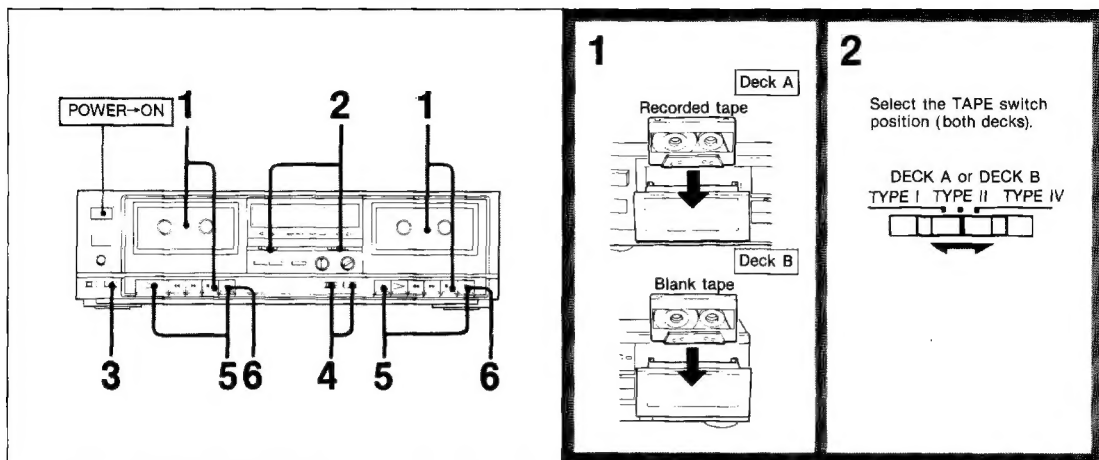
For TYPE IV (metal) tape

Select the appropriate TAPE SELECT switch position

- Cassette tapes can be classified into four major types: TYPE I, II, III and IV.
- TYPE I, II and IV cassette tapes can be used with this unit.
- Characteristics of the cassette tapes within each type may vary slightly depending on the manufacturer or grade.
- The following reference table shows the classification of Sony cassette tapes.

Tape type	Tapes (C30-C90)
TYPE I (Normal)	SONY: EF, HF, HF-S, HF-ES Other TYPE I equivalent tapes (For 120 μ s EQ, NORMAL BIAS)
TYPE II (CrO ₂)	SONY: UX, UX-S, UX-ES, UX-PRO Other TYPE II equivalent tapes (For 70 μ s EQ, HIGH BIAS)
TYPE IV (Metal)	SONY: METAL-ES Other TYPE IV equivalent tapes (For 70 μ s EQ, METAL BIAS)

Tape Dubbing (from Deck A to Deck B)



How to select DIRECTION MODE (Step 3)

To dub on one side of the cassette:

To dub on both sides of a cassette:

Is it necessary to adjust the recording level and select the Dolby NR system?

No. Because the tape in deck B is recorded with the same recording level and Dolby noise reduction system as the original tape in deck A.

However, you need to set the Dolby system to match the tape in deck A when monitoring the sound.

Notes on tape dubbing

- Do not change the DUBBING SPEED setting during tape dubbing.
- If the sound is affected by the proximity of a television set during high-speed dubbing, turn the television set off or move it away from the deck.

How to edit tapes (possible only during normal-speed dubbing)

1 During normal-speed dubbing, press on deck B.

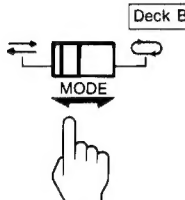
2 Locate the portion to be dubbed with or on deck A, then press .

Or replace the cassette with a new one.

3 Press on deck A and press on deck B to start dubbing again.

3 For TC-WR510 only

Check the direction mode indicators and select the side to be dubbed and the side to play with DIRECTION.




4

Select dubbing speed.

DUBBING SPEED

▲ HIGH

■ NORMAL



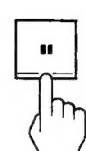
5

Press **II** and then **>** on deck A.

Press **II** and then **●** on deck B.

The DUBBING SPEED and REC indicators will light up.

6 Both decks

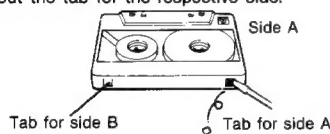
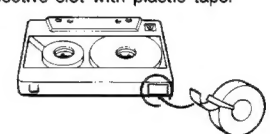


Dubbing starts..

To stop dubbing, press
■ ▲ on deck B, then **■ ▲** on deck A.

Notes on Cassettes

To prevent accidental erasure

To protect a recording	To reuse a cassette
<p>Break out the tab for the respective side.</p>  <p>Side A</p> <p>Tab for side B</p> <p>Tab for side A</p>	<p>Cover the respective slot with plastic tape.</p> 

Cassettes exceeding 90 minutes are not recommended except for long continuous recording and playback
 Cassettes exceeding 90 minutes uses extremely thin tape which tangles easily when the tape transport is stopped and started frequently.

Cassette care

- Avoid touching the tape surface of a cassette, as any dirt or dust will contaminate the heads.
- Keep cassettes away from equipment with magnets, such as speakers and amplifiers, as erasure or distortion on the recorded tape could occur.
- Do not expose cassettes to direct sunlight, extremely cold temperatures or high humidity.

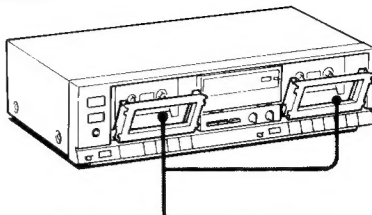
Maintenance

Cleaning the Heads and Tape Path (both decks)

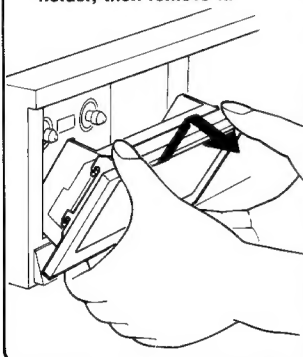
Clean all surfaces over which the tape travels after every 10 hours of operation. Otherwise, the following symptoms might appear.

- low-quality sound
- a decrease in sound level
- excessive wow, flutter or dropout
- incomplete erasure
- recording cannot be made

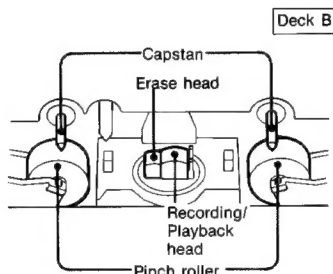
To obtain high-quality recording sound, cleaning before every recording is recommended.



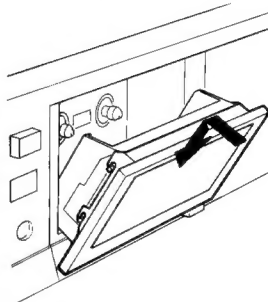
- 1 Press \blacktriangle to open the cassette holder, then remove it.**



- 2 Wipe the heads, the pinch rollers and the capstans with a cleaning tip slightly moistened with tape cleaning fluid or alcohol.**



- 3 Replace the cassette holder.**



Demagnetizing the Heads (both decks)

After 20 or 30 hours of use, or when you notice hiss and/or loss of high frequencies, the residual magnetism built up on the heads should be removed.

- 1 Turn off the POWER.**
- 2 Demagnetize the heads with any commercially available demagnetizer.**
Refer to the instruction manual of the demagnetizer for detailed instructions.

Cleaning the Cabinet

Clean the cabinet, panel and controls with a soft cloth slightly moistened with a mild detergent solution.

Important

Do not use any type of abrasive pad, scouring powder or solvents such as alcohol or benzene.

Specifications

Recording system

4-track 2-channel stereo

Fast winding time

Approx. 120 sec. (with C-60 cassette)

Bias

AC Bias

Signal-to-noise ratio (NAB, at peak level)

Cassette	Dolby NR switch		
	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METAL-ES)	58 dB	65 dB	71 dB
TYPE II (Sony UX-S)	56 dB	63 dB	69 dB
TYPE I (Sony HF-S)	54 dB	61 dB	67 dB

Total harmonic distortion

1.0 % (with Sony METAL-ES cassettes)

Frequency response (DOLBY NR OFF)

TYPE IV cassette (Sony METAL-ES)	30–15,000 Hz (± 3 dB DIN) 30–13,000 Hz (0VU recording)
TYPE II cassette (Sony UX-S)	30–14,000 Hz (± 3 dB DIN)
TYPE I cassette (Sony HF-S)	30–13,000 Hz (± 3 dB DIN)

Wow and flutter

0.12% WRMS (NAB)
 $\pm 0.2\%$ W Peak (DIN)

Inputs

Line inputs (phono jacks)	Sensitivity	77.5 mV (-20 dB)
	Input Impedance	50k ohms

Outputs

Line outputs (phono jacks)	Rated output level	0.44 V (-5 dB) at a load impedance 47k ohms
	Load impedance	Over 10k ohms
Headphone output (stereo phone jack)	Output level	0.3 mW at a load impedance of 32 ohms

General

Power requirements

Model for the U.S.A.:

120 V AC, 60 Hz

Model for the United Kingdom:

240 V AC, 50/60 Hz

Power consumption

TC-WR510: 20W

TC-W310: 18W

Dimensions

Approx. 430 \times 118 \times 280 mm (w/h/d)

(17 \times 4 $\frac{3}{4}$ \times 11 $\frac{1}{8}$ inches)

including projecting parts and controls

Weight

TC-WR510: Approx. 3.7 kg (8 lbs 3 oz)

TC-W310: Approx. 3.4 kg (7 lbs 8 oz)

Supplied accessory

Audio connecting cord (2)

Design and specifications subject to change without notice.

Note

This appliance conforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

Troubleshooting Guide

The following trouble checks will help you correct the most common problems encountered with your tape deck. Should any problems persist after you have made these checks, consult your nearest Sony dealer.

Before proceeding with these trouble checks, first check these basic points:

- The power cord is firmly connected.
- Amplifier connections are firmly made.
- Heads, capstans and pinch rollers are clean.
- The amplifier controls and switches are set correctly.

Function buttons and tape transport problems

Symptom	Cause	Remedy
Function buttons do not activate.	Cassette holder is not fully closed.	Close the holder completely.
● button does not activate.	No cassette in the holder.	Insert a cassette.
	Tab has been removed from the cassette.	Cover the hole with plastic tape. (page 11)
Automatic shut-off mechanism activates before the tape comes to its end.	Tape is slack.	Take up the tape slack.
	Cassette shell is deformed.	Use another cassette.
Excessively loud tape transport noise during fast winding	This depends on the cassette used and is not a problem.	—

Recording and playback problems

Symptom	Cause	Remedy
Recording or playback cannot be done or there is a decrease in sound level.	Record/playback and erase heads are either dirty or magnetized.	Clean or demagnetize the heads.
	Improper connection	Make connections properly.
	Improper setting of the amplifier controls	Set the amplifier controls to the appropriate positions.
Excessive wow, flutter or dropout	Head, capstan or pinch roller is dirty.	Clean in accordance with instructions shown on page 12.
Incomplete erasure	Erase head is dirty.	Clean the erase head.
Increased noise or poor reproduction in high frequencies	Head is magnetized.	Demagnetize the head.
Unbalanced tone in high frequencies	Improper setting of the DOLBY NR switches.	Set the switches during playback to the same position used during recording.
	Improper setting of the TAPE SELECT switches.	If recorded with the wrong setting, adjust the tone with the amplifier during playback.
	The unit is placed near a television set.	Move the deck away from the television set.
Pause mode cannot be released by pressing the pause button on the unit. (TC-WR510 only)	The pause button has been pressed on the remote commander.	Press the pause button on the remote commander.
The pause mode cannot be released by pressing the pause button on the remote commander.	The pause button on the unit has been pressed.	Press the pause button on the unit to release the pause mode.

Noise

Symptom	Cause	Remedy
Hum noise	The deck is stacked on or under the amplifier.	Separate the units.
Noise is recorded.	Recording was made near equipment such as a television set or a color monitor, and interference has affected the recording on the tape and the Dolby NR system.	Move the unit away from television set or color monitor.